

Claims

We claim:

1. A deep tillage point structure adapted for connection to an upright shank for forward movement through a compacted layer of soil, the point structure comprising: a main body having a fore-and-aft extending leading nose with a front surface which extends upwardly and rearwardly from a nose leading edge for initiating fracture of the compacted layer, a tapered top surface extending rearwardly and upwardly from the front surface, the tapered top surface including outwardly facing surfaces extending downwardly from an apex, the surfaces forming an included obtuse angle at the apex and causing a parting stress of the fractured compacted layer as soil moves rearwardly along the top surface.
2. The point structure as set forth in claim 1 wherein the obtuse angle is approximately 100 degrees adjacent an aft portion of the nose.
3. The point structure as set forth in claim 1 including a shin member extending vertically from an aft portion of the nose, the shin member having a sharp leading edge for parting the compacted layer as the soil moves rearwardly past the nose.
4. The point structure as set forth in claim 3 wherein the leading edge of the shin member defines an included angle of less than 45 degrees.
5. The point structure as set forth in claim 4 wherein the included angle is approximately 30 degrees.
6. The point structure as set forth in claim 1 wherein the main body has a bifurcated attaching area adapted to receive a lower mounting end of the shank, the bifurcated end having walls with a thickness of at least one half an inch and including apertures for receiving mounting bolt structure recessed within the apertures to prevent the moving soil from wearing the mounting bolt structure.
7. The point structure as set forth in claim 6 wherein the main body is cast from carbide austempered ductile iron and the thickness of the walls at the apertures is sufficient to prevent brittleness in the walls.
8. The point structure as set forth in claim 3 wherein the outwardly facing surfaces extend rearwardly past the sharp leading edge to help move the soil

outwardly from the shank.

9. The point structure as set forth in claim 1 further comprising wings extending outwardly from the body rearwardly adjacent the nose and below the apex for entering a fracture area initiated by the front surface.

10. The point structure as set forth in claim 9 wherein the wings have a lift angle between 15 and 25 degrees.

11. The point structure as set forth in claim 9 wherein the wings slope downwardly in an outward direction at an angle less than 15 degrees.

12. The point structure as set forth in claim 11 wherein the wings slope downwardly at an angle of approximately 7 degrees.

13. The point structure as set forth in claim 9 wherein the wings have a wing width of less than 12 inches and greater than 9 inches.

14. The point structure as set forth in claim 9 wherein the wings have leading edges angled rearwardly at an acute angle relative to a vertical plane extending perpendicular to a forward direction of travel of the point structure.

15. The point structure as set forth in claim 9 wherein the wings have leading edges spaced rearwardly from the nose leading edge about 10 inches.

16. A deep tillage point structure adapted for connection to an upright shank for forward movement through a compacted layer of soil, the point structure comprising: a main body having a fore-and-aft extending leading nose, the nose having a leading edge and a top surface for initiating fracture of the compacted layer of soil, the top surface extending between the leading edge and an aft portion, upright parting shin structure supported by the aft portion for parting the layer of soil, and outwardly extending wings supported by the main body below the top surface for entering a fracture area initiated by the nose.

17. The point structure as set forth in claim 16 wherein the top surface is tapered, the tapered top surface including outwardly facing surfaces extending downwardly from an apex, the outwardly facing surfaces forming an included obtuse angle at the apex adjacent the aft portion and causing a parting stress of the fractured compacted layer as soil moves rearwardly along the top surface.

18. The point structure as set forth in claim 16 wherein the wings have lift

angles of between 15 and 25 degrees.

19. The point structure as set forth in claim 18 wherein the wings have a downward slope in an outward direction, the downward slope being in the range of 0 to 15 degrees.

20. The point structure as set forth in claim 16 wherein the wings have leading edges located rearwardly of the shin structure and below the top surface, the leading edges located near a lowermost extremity main body so the leading edges enter the soil at a level just above a level of entry of the leading edge.

21. The point structure as set forth in claim 16 wherein the aft portion includes a bifurcated portion received over the shank and bolt structure extending through the bifurcated portion, wherein the wings include leading wing edges located adjacent the bolt structure.

22. The point structure as set forth in claim 16 wherein the wings have lift angles of between 15 and 25 degrees, a downward slope in the outward direction between 0 and 15 degrees, and aft edges terminating forwardly adjacent an aft edge of the shank so that soil lifted by the wings can drop directly into a slot formed behind the shank.

23. The point structure as set forth in claim 22 wherein the width of the nose is approximately 1.75 inches and the length of the nose from the leading edge to the parting shin structure is at least 7 inches.

24. The point structure as set forth in claim 23 wherein the wings have a total wing width of greater than 9 inches.